PROJECT QUALITY PLAN

KAKI BUKIT INDUSTRIAL PARK - PLOT D

For

M/S KAKI BUKIT INDUSTRIAL PARK PTE LTD

Copy No.	

Prepared By: Goh Soon Huat

Authorised By: Tan Lai Siong

Date: 30 December 1998

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SECTION 1

QUALITY PLAN CONTROL AND DISTRIBUTION

1.1 List of Copy Holders

Copy No.	Copy Holder	Date of Issue
1	1025(D)-PQP File	6 June 1997
2	Goh Soon Huat	6 June 1997

1.2 Revision Record

Revision	Date of Issue	Section Reference	Page(s)	Remarks
1/0	6 June 1997	Section 1 to Section 9	26	1st Issue of PQP
2	30 December 1998	Section 1 to Section 10	26	2nd Issue of PQP

SECTION 2

PROJECT INFORMATION

2.1 Project Description

Type of Development	Industrial

Size of Development	
Site Area, m²	18,655
Nett Floor Area, m²	-
Gross Floor Area, m²	37,273
Covered Carpark, m²	-
Total Built-up Area m²	-
No. of Covered Carpark Lots	-
No. of Apartments/Houses	82 (Terrace Factory)
No. of Beds (for Hospital)	-
No. of Guest Room (for Hotel)	-
No. of Blocks/No. of Storeys	5 Storeys with 1 Basement
No. of Phases	-

2.2 Cost Plans

M&E Services Cost Plan (S$ x 1M)									
Services	EI	ACMV	LI	FFAI	PSI				
Estimate	4.11	0.85	2.97	1.355	1.9				
Awarded	3.363	0.93	2.87	1.0	1.800				

Total Project Construction Cost (S$ x1M)			
	Site Clearance	Piling	Main Contract
Estimate	-	-	35.617
Awarded	-	7.27	39.5

Site Clearance shall include earth work, soil improvement, service diversion and termination.

2.3 Scope of Works

2.3.1 Scope of Consultancy Services

Conceptual/Schematic Design	✓
Detailed Design	✓
Tender Documentation	✓
Tender Evaluation	✓
Contract Supervision	✓
M&E Costing	✓
Submissions to Authority	✓

(✓ *where applicable*)

2.3.2 Scope of M&E Services

ELECTRICAL	✓	AIR CONDITIONING	✓	SPRINKLER	✓	SANITARY	✓	SWIMMING POOL	
LIFT	✓	MECHANICAL VENTILATION	✓	FIRE ALARM	✓	COLD WATER	✓	STEAM BOILER	
ESCALATOR		MECHANICAL SMOKE EXTRACT		HOSEREEL	✓	HOT WATER		FUEL STORAGE	
PABX		COMPUTER A/C		WET RISER		TOWN GAS			
SECURITY		BST CARPARK EXH		DRY RISER		LPG GAS			
TELELIFT		HEATING				MEDICAL GAS			
DATA COMM.									
FLUSHFLOOR TRUNKING									

(✓ *where applicable*)

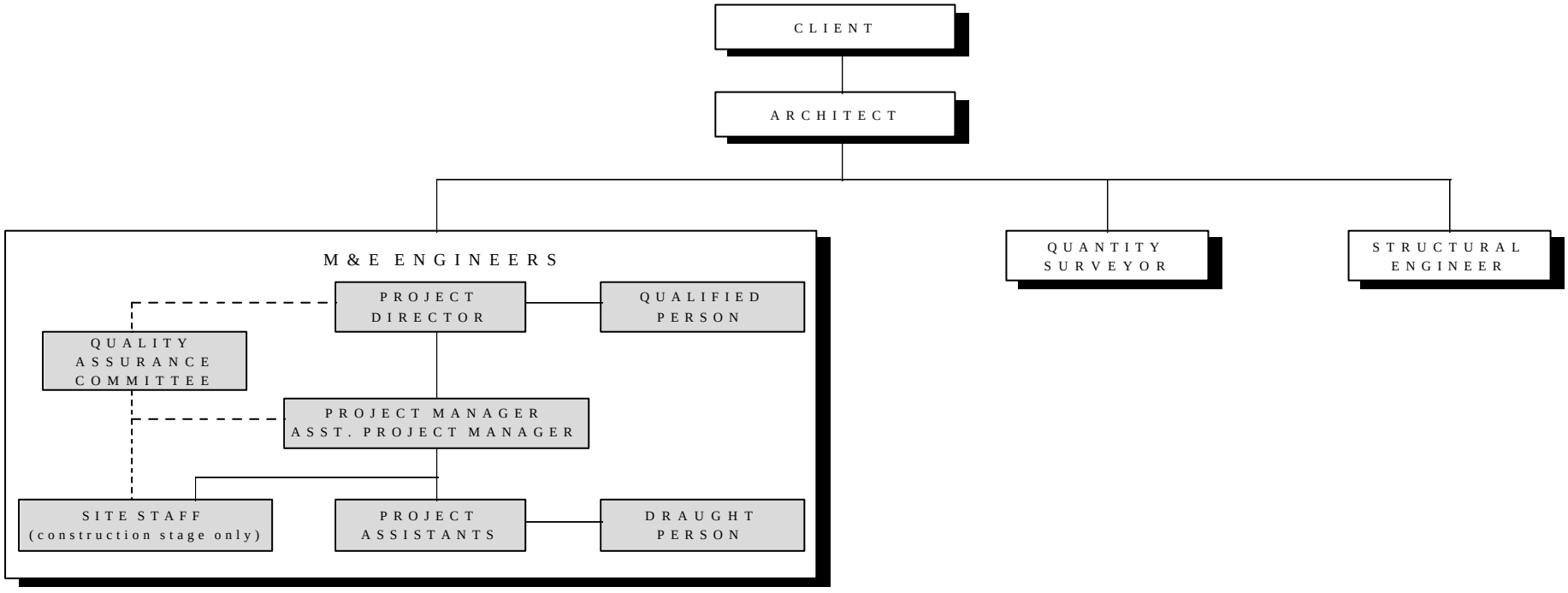
2.3.3 Submission to Relevant Authorities by Others

EJECTOR & DIVERTER		SUMP PUMP		FUEL OIL TANK		LIFT	✓	PRESSURE VESSEL		HOISTS		FOAM	

SECTION 3

ORGANISATION

3.1 Organisational Chart



SECTION 3

ORGANISATION

3.2 AEC's Project Team Member

TITLE		NAME
Project Director		Tan Lai Siong (TLS)
Qualified Person	Mechanical	Andrew Loh (LCT)
	Electrical	Tan Lai Siong (TLS)
Project Manager		Goh Soon Huat (GSH)
Assistant Project Manager		Chong Lai Meng (CLM)
Project Assistant (Mech)		Aw Geok Hui (AGH)
Project Assistant (Elect)		Wong Tack Chow (WTC)
Draughtsperson		Common Pool
Resident Engineer		
Assistant Resident Engineer		-
Clerk-of-Work (M&E)		-

3.3 Client/Client's Representatives

Client:- Kaki Bukit Industrial Park Pte Ltd

Address:- 62 Kaki Bukit Industrial Terrace
Singapore 416142

Tel : 844 0811

Fax : 844 0822

Client's Representative Related Staff:-

Name of Firm	Contact Person	Contact
Kaki Bukit Industrial Pte Ltd	Name: Mr Ong Chong Wei Position: Director	Tel: 844 0811 Fax: 844 0822 Pager: - Handphone: - E-mail: -
-	Name: Position	Tel: Fax: Pager: Handphone: E-mail:
-	Name: Position	Tel: Fax: Pager: Handphone: E-mail:

3.4 **Other Consultants (**Local)

Function / Name of Firm	Contact Person	Contact
Architect DP Architects Pte Ltd	Name: Mr Song Yew Kee Position: Senior Associate	Tel: 338 3988 Fax: 337 9989 Pager: - Handphone: - Email: -
Quantity Surveyor KPK Quantity Surveyors	Name: Mr Loh Kwi Leong Position: Director Name: Mr John Bosh Position:	Tel: 536 3303 Fax: 536 2633 Pager: - Handphone: - Email: kpkqs@singnet.com.sg
Structural Engineer Loh Consultants Pte Ltd	Name: Teoh Chee Keong Position: Senior Engineer	Tel: 735 6028 Fax: 735 6005 Pager: - Handphone: - Email: -
Interior Designer -	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Lighting Consultant -	Name: Position:	Tel: Fax: Pager: Handphone: Email:
Acoustic Consultant -	Name: Position:	Tel: Fax: Pager: Handphone: Email:
_____ -	Name: Position:	Tel: Fax: Pager: Handphone: Email:

3.4 Other Consultants (Overseas)

NOT USED

3.5 Contractors/Sub-Contractors

Function / Name of Firm	Contract *	Contact Person	Contact
Main Contractor Boonann Construction Pte Ltd	Lump Sum	Name: Mr Yeo Siew Hong Position: Director	Tel: 743 2684 Fax: 743 2563 Pager: - Handphone: - Email: -
Air Conditioning & Ventilation Installation Sub-Contractor -		Name: Position:	Tel: Fax: Pager: Handphone: Email:
Plumbing & Sanitary Installation Sub-Contractor Chong Long Hak Kee Construction Trading Co	NSC	Name: Mr Chew Swee Kiat Position: Director	Tel: 842 7486 Fax: 842 1439 Pager: 9509 9660 Handphone: - Email: -
Electrical Installation Sub-Contractor Ngee Cheong Contractors Pte Ltd	NSC	Name: Mr David Sung Position: General Manager	Tel: 293 6830 Fax: 293 095 Pager: - Handphone: - Email: -
Lift & Escalator Installation Sub-Contractor Skyline Elevator (S) Pte Ltd	NSC	Name: Mr Vincent Chan Position: Manager	Tel: 536 1649 Fax: 536 1657 Pager: - Handphone: - Email: -
Fire Fighting & Alarm Installation Sub-Contractor Boonann Construction Pte Ltd	DSC	Name: Mr Alan Ee Position: Engineer	Tel: 743 2684 Fax: 743 2563 Pager: - Handphone: - Email: -
Swimming Pool Filtration Plant Installation Sub-Contractor -		Name: Position:	Tel: Fax: Pager: Handphone: Email:
Carpark System Installation Sub-Contractor -		Name: Position:	Tel: Fax: Pager: Handphone: Email:

** Type of Contract* - *NSC (Nominated Sub-Contract)*
- *DSC (Domesticated Sub-Contract)*
- *DC (Direct Contract)*
- *NS (Nominated Supplier)*

3.6 Authorities

Authorities/Department	Contact Person	Tel No:/Fax No:
PowerGrid/Power Supply:		
(a) Customer Supply	Mr Lee Chi Ming	Tel: 831 8281 Fax: 831 8239
(b) Sub-Station	Mr Tan Chong Poh	Tel: 831 8551 Fax: 831 8564
(c) Installation	Mr Francis Chang	Tel: 831 8555 Fax: 831 8564
(d) Meter Section	-	-
(e) Road Lighting	-	-
(f) Diversion	-	-
Telecom:		
(a) Planning/Line Plant	Mr Lee Him Buan	Tel: 838 2847 Fax: 733 9895
(b) Installation	-	-
(c) Diversion	-	-
BCD:		
(a) Building Plan	-	-
FSB:		
(a) Building Plan	-	-
(b) M&E Section	Mr Goh Teck Tham	Tel: 838 6414
PUB (Water)		
(a) Water Conservation	-	-
(b) Plumbing Plan	Ms Wong Wai Cheng	Tel: 731 3544 Fax: 731 3023 E-mail: pubweb@pub.gov.sg
(c) Diversion	-	-
PowerGas:		
(a) Planning/Submission	-	-
(b) Installation/Inspection	-	-
(c) Diversion	-	-
ENV (Sewerage):		
(a) Building Plan	-	-
(b) M&E Section	Mr Chow Y M	Tel: 337 7661 Fax: 337 7662
(c) Diversion	-	-
ENV (Pollution Control)		
(a) Planning/Submission	-	-
(b) Inspection	-	-

SECTION 4

PROGRAMME

4.1 Overall Programme

ID	TASK NAME	1997												1998											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1.	Preliminary Planning																								
2.	Planning Submission																								
3.	Detail Design																								
4.	BP Submission																								
5.	BP Submission (Amendments)																								
6.	Tender Period for Piling																								
7.	Tender Period for Sub-Structure																								
8.	Tender Period for Super-Structure																								
9.	Piling Period																								
10.	Sub-Structure Construction Period																								
11.	Super-Structure Construction Period																								
12.	TOP																								
13.	CSC																								

SECTION 4

PROGRAMME

4.2 Authority Submission Status for M&E Services - 1st Submission

Service	Authority	Original Submission		Comments/Resubmission						Approval/ Clearance
		Scheduled	Actual	Comment	Resubmit	Comment	Resubmit	Comment	Resubmit	
Application for Electricity Supply	Power Supply Pte Ltd	-	4/7/95	-	-	-	-	-	-	18/7/95
Power Supply Substation	PowerGrid Pte Ltd	4/9/95	16/10/95	-	-	-	-	-	-	31/10/98
Main Single Line Diagram	Power Supply Pte Ltd	14/5/96	10/6/96	-	-	-	-	-	-	22/7/96
Consumer Switchroom Layout	PowerGrid Pte Ltd									
Metering Layout	PowerGrid Pte Ltd									
Sanitary Installation	ENV (Sewerage)									
Domestic Water Supply	PUB (Water)									
Gas Supply Installation	PowerGas Pte Ltd									
Air Conditioning & Ventilation Inst.	Fire Safety Bureau	-	2/10/96	-	-	-	-	-	-	25/11/96
Fire Fighting & Alarm Installation	Fire Safety Bureau	-	2/10/96	-	-	-	-	-	-	17/10/96
Telephone Installation	Telecom (Broadband)	13/5/96	20/6/96	-	-	-	-	-	-	7/8/96
	Telecom (TDCS)	NA	NA							
	Telecom (Domestic Operation)	NA	NA							
Fuel Storage	Fire Safety Bureau	NA	NA							
	Pollution Control Department	NA	NA							

SECTION 4

PROGRAMME

4.3 Authority Submission Status for M&E Services (Amendments) - 2nd Submission

NOT USED

SECTION 5

PROJECT RECORDS

5.1 List of Internal Files

Standard Files

File Ref: 1025(D)		File Ref: 1025(D)	
-CM	✓	-QSP	-
-PC	✓	-BD	✓
-AE	✓	-CC	✓
-AM	✓	-CF	✓
-AA	✓	-GC	✓
- PQP	✓		

Project Files to be initiated by PM as and when required

File Ref: 1025(D)		File Ref: 1025(D)		File Ref: 1025(D)	
-SM	✓	-SR	✓	-ET	✓
-SC	-	-QM	-	-MT	-
-AI	✓	-EC	✓	-DF	✓
-SQ	✓	-MC	✓	-EOT	✓
-CO	✓	-PP	✓	- AD	✓

Service Files to be initiated by PM as and when required

	Service										
File Ref: 1025(D)	ACVI	FFAI	PSI	EI	LI	SPFP	ME				
-G	✓	✓	✓	✓	✓	-	-				
-Q	-	-	-	-	-	-	-				
-VO	-	-	-	-	-	-	-				
-PP	-	✓	✓	-	✓	-	✓				
-AI	-	-	-	-	-	-	-				
-AD	-	-	-	-	-	-	-				
-CF	-	✓	✓	✓	-	-	-				

SECTION 5

PROJECT RECORDS

5.2 Filing of Drawings

The following team members shall take charge of filing of drawings, stamping "SUPERSEDED" drawings, etc.

Description	Team Member
Incoming Architectural Floor Plans	Goh Soon Huat
Incoming Architectural Sketches/Details	Goh Soon Huat
Incoming Structural Drawings	Goh Soon Huat
M&E Drawings	
- Electrical Installation	Goh Soon Huat
- Lift Installation	Goh Soon Huat
- Air Conditioning & Ventilation Installation	Chong Lai Meng
- Fire Fighting & Alarm Installation	Chong Lai Meng
- Plumbing & Sanitary Installation	Chong Lai Meng
Other Drawings	Goh Soon Huat

SECTION 6

INTERFACING

6.1 Method of Interface

Description	Method of Interface	
Client's Review & Approval	M&E Design Report	
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	
Interface With External Design Teams	M&E Design Report	
	Pre-planned meeting at fixed intervals	✓
	Telefax, letter and telephone	✓
	Email	✓
Interface Between Internal Design Teams	Telephone	✓
	Email	✓
	Internal Project Team Meeting	✓
	Circulation of Information	✓

(✓ *where applicable*)

SECTION 6

INTERFACING

6.2 Internal Design Interface

NOT USED

SECTION 6

INTERFACING

6.3 Circulation of Documents to External Parties

	Code: A - Approval Required C - For Comments I - For Information Only	Client/ Client Rep.	Client's Project Manager	Architect	Structural Engineer	Quantity Surveyor	
1.	**Letters/Fax:**						
a.	Project Design	A/C/I	-	C	C	-	
b.	Project Administration	A/I/C	-	C	I	I	
c.	Project Cost Estimate/Contract Cost	A/C/I	-	I	-	I	
2.	**Drawings**						
a.	Outline Design Drgs.	A/C/I	-	C	C	-	
b.	Sketch Design Drgs.	I	-	C	C	-	
c.	Final Design Drgs.	I	-	C	C	-	
d.	Shop Drawings	I	-	C	C	-	
e.	As Built Drgs.	I	-	-	-	-	
3.	**Other Document**						
a.	Specification	A/C/I	-	I	-	-	
b.	Tender Document	I	-	I	-	C	
c.	Tender Evaluation Report	A	-	I	-	I	
d.	Design Report	A/C/I	-	C	-	-	
e.	Progress Report	I	-	I	-	-	
f.	Financial Report	I	-	I	-	C	
g.	Minutes of Meeting	I	-	I	-	-	
h.	Inspection Report	I	-	I	-	-	
i.	Testing & Comm. Report	I	-	I	-	-	
j.	O & M Manual	I	-	I	-	-	

SECTION 7

WORK AUTHORISATION

Activity \ Authorised Signatories	PD	QP	PM	SS
General Correspondences with Client	✓		✓	
General Correspondences with Other Consultants	✓		✓	
M&E Cost Estimate Report	✓		✓	
M&E Design Report	✓		✓	
Check Prints	✓	✓	✓	
Tender Drawing Approval	✓		✓	
Tender Specification Approval	✓		✓	
List of Tenderers	✓		✓	
Tender Questionaires	✓		✓	
Tender Reports	✓		✓	
Draft Letter of Award	✓		✓	
Review of Contractor's Shop Drawing	✓		✓	
Review of Contractor's Technical Submittal	✓		✓	
Review of Contractor's Sample Submittal	✓		✓	
Contractor's Request for Deviation	✓		✓	
Progress Payment Valuation Form	✓		✓	
Final Account Valuation	✓		✓	
Draft Variation Order	✓		✓	
Engineer/Architect's Instruction/Direction	✓		✓	
Site Instruction/Direction	✓		✓	
Correspondence/Submission to Authorities	✓	✓	✓	

(✓ *where authorised*)

Key to abbreviations:-

PD : Project Director
QP : Qualified Person
PM : Project Manager/Assistant Project Manager
SS : AEC Site Staff

SECTION 8

DESIGN INPUT & METHODOLOGY

8.1 List of Client's Standards, Reference Documents or Brief

ITEM	KEPT BY
Nil	-

8.2 List of Applicable Code of Practice and Regulations

Electrical Wiring	~~BS~~	SS	~~IEE~~	~~NFPA~~	
Lightning Protection System	~~BS~~	SS			
Air Conditioning & Ventilation Installation	~~BS~~	~~AS~~	~~NFPA~~	SS	~~MS~~
Lift Installation	~~BS~~	SS			
Sprinkler System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~LPC~~
Wet Riser System	~~BS~~	~~SS~~	~~NFPA~~	~~AS~~	~~MS~~
Automatic Fire Alarm System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~
Sanitary System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~
Plumbing System	~~BS~~	SS	~~NFPA~~	~~AS~~	~~MS~~

(Delete where necessary)

SECTION 8

DESIGN INPUT & METHODOLOGY

8.3 List of Design Guide or Handbook Used

Carrier's Handbook of Air Conditioning System Design

ASHRAE Handbooks

Institute of Plumbing's Plumbing Services Design Guide

8.4 List of Applicable Quality System Procedures

Alpha Engineering Consultant's Quality System Procedures

Section	Title
A1	Documentation of Quality System Procedure
A2	Documentation of Project Quality Plan
A3	Administration Control
A4	Document Control
A5	Library Control
A6	Archive Control
A7	Purchasing Control
A8	Training Control
A9	Feedback Reporting
A10	Computer Control
B1	Preparation of Consultancy Offer
B2	Project Commission and Service Agreement
B3	Design Control
B4	Design Change Control
B5	Drawing Control
B6	Specification Control
B7	Tender Process and Evaluation
C1	Contruction Process Control
C2	Testing and Commissioning
D1	Quality System Audit

SECTION 8

DESIGN INPUT & METHODOLOGY

8.5 List of Software Used For Design/Analysis

DESCRIPTION/ PACKAGE NAME	VERSION	SUPPLIER/ SOURCE	PURPOSE	
Calculux	2.30	Philips	Lighting design	✓
Cophos	3.31	Zumtobel	Lighting design	
Carrier E20-II	3.21	Carrier	Programme for determination of heat load, duct size and its losses, etc.	✓
Gensize 2	2.1	Onan	Generator sizing	✓
Lift Traffic	-	Alpha Engineering	Lift traffic calculation	
Econdial	2.5	Merlin Gerlin	Design for low voltage network	
Hyena	4.00.1	ACADS-BSG	Fire Sprinkler & Hydrant Analysis	
Fault Level Calculation	-	Alpha Engineering	Calculation of voltage drop and fault level	✓
AutoHan	-	HongKong Productivity Council	Chinese Character Input System	

(✓ *where applicable*)

SECTION 9

CLIENT'S REQUIREMENTS

9.1 List of Output Required by Client:-

Item	* Remarks
M&E Design Report	Not Required
M&E Cost Estimate Report	C
Pre-Qualification of Tenderers	Not Required
Tender Documents	I
Tender Report	A
Payment Valuation for QS	I
Certificates of Supervision for TOP/CSC	Re

** Remarks*

A: for approval C: for comment I: for Information Re: for record

Other purposes and for action: please specify.

9.2 Specific Procedures Required By Client *(If applicable)*

N.A.

SECTION 10

LIST OF SUB-JOB

10.1 List of Sub-Job Numbers

Sub Job No	Description	Allocation Details
601	Alterations/Additions to Existing Sprinkler System at Unit #01-25	-
602	Fitting-out works at Unit #03-11	-
603	Alterations/Additions to Existing Sprinkler System at Unit #01-41	-
604	Fitting-out works at Unit #03-02	-
605	Fitting-out works at Unit #01-29/30	-